

What is claimed is:

1. A method for regulating fat metabolism or a fat metabolic process in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby regulating fat metabolism or the fat metabolic process in the subject.
2. A method for regulating fat metabolism or a fat metabolic process in a subject, the method comprising administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thereby regulating fat metabolism or the fat metabolic process in the subject.
3. The method of claim 1, wherein the stabilizing HIF $\alpha$  comprises administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thus stabilizing HIF $\alpha$  in the subject.
4. The method of any of claims 2 or 3, wherein the HIF hydroxylase activity is HIF prolyl hydroxylase activity.
5. The method of claim 1, wherein the stabilizing is in vitro.
6. The method of claim 1, wherein the stabilizing is in vivo.
7. The method of claim 1, wherein the subject is selected from the group consisting of a cell, a tissue, and an organ.
8. The method of claim 1, wherein the subject is an animal.
9. The method of claim 1, wherein the subject is a mammal.
10. The method of claim 1, wherein the subject is a human.
11. The method of claim 1, wherein the fat metabolic process is selected from the group consisting of fat uptake, fat transport, fat storage, fat processing, fat synthesis, and fat utilization.

12. The method of claim 1, wherein HIF $\alpha$  is selected from the group consisting of HIF1 $\alpha$ , HIF2 $\alpha$ , and HIF3 $\alpha$ .
13. The method of claim 4, wherein the prolyl hydroxylase is selected from the group consisting of EGLN1, EGLN2, and EGLN3.
14. A method for achieving fat homeostasis in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby achieving fat homeostasis in the subject.
15. A method for achieving fat homeostasis in a subject, the method comprising administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thereby achieving fat homeostasis in the subject.
16. A method for treating or preventing obesity in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby treating or preventing obesity in the subject.
17. A method for treating or preventing obesity in a subject, the method comprising administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thereby treating or preventing obesity in the subject.
18. A method for regulating body weight in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby regulating body weight in the subject.
19. A method for regulating body weight in a subject, the method comprising administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thereby regulating body weight in the subject.
20. A method for reducing body fat in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby reducing body fat in the subject.
21. A method for reducing body fat in a subject, the method comprising administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thereby reducing body fat in the subject.

22. The method of claim 20, wherein the body fat is visceral fat.
23. The method of claim 20, wherein the body fat is abdominal fat.
24. A method for inducing weight loss in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby inducing weight loss in the subject.
25. A method for inducing weight loss in a subject, the method comprising administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thereby inducing weight loss in the subject.
26. A method for altering expression of a fat regulatory factor in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby altering expression of a fat regulatory factor in the subject.
27. A method for altering expression of a fat regulatory factor in a subject, the method comprising administering to the subject an effective amount of a compound that inhibits HIF hydroxylase activity, thereby altering expression of a fat regulatory factor in the subject.
28. The method of claim 26, wherein the fat regulatory factor is selected from the group consisting of leptin, apolipoprotein A-IV, cytosolic acyl CoA thioesterase-1, insulin-like growth factor binding protein (IGFBP)-1, carnitine acetyl transferase, PAI-1, DEC1/Stra13, and PPAR- $\gamma$ .
29. A method for reducing oxygen consumption in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby reducing oxygen consumption in the subject.
30. A method for inducing a metabolic shift in fat utilization in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby inducing a metabolic shift in fat utilization in the subject.

31. A method for inducing a metabolic shift toward anaerobic metabolism in a subject, the method comprising stabilizing HIF $\alpha$  in the subject, thereby inducing a metabolic shift toward anaerobic metabolism in the subject.
32. A method for decreasing aerobic metabolism and increasing anaerobic metabolism in a subject, the method comprising:
  - (a) altering expression of a glycolytic factor in the subject; and
  - (b) altering in coordinated fashion a fat regulatory factor in the subject, thereby inducing a decrease in aerobic and an increase in anaerobic metabolism.
33. The method of claim 32, wherein the glycolytic factor is selected from the group consisting of PFK-P, PFK-L, enolase-1, GluT-1, lactate dehydrogenase, aldolase-1, hexokinase-1, IGFBP-1, and IGF, and further wherein the fat regulatory factor is selected from the group consisting of leptin, apolipoprotein A-IV, cytosolic acyl CoA thioesterase-1, insulin-like growth factor binding protein (IGFBP)-1, carnitine acetyl transferase, PAI-1, DEC1/Stra13, and PPAR-g.